Foreign Subsidization and Excess Capacity

Bruce A. Blonigen
University of Oregon and NBER
And
Wesley W. Wilson
University of Oregon

European Association for Research in Industrial Economics

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Background

- U.S. Steel industry holds that foreign subsidization and excess capacity has to its long-run demise. Howell et al. (1988) summarize:
  - Foreign Subsidies cause foreign producers to have excess capacities.
  - Foreign barriers protect market power in foreign countries, and the excess is dumped on the U.S. Market.
  - The response of the US government is to erect antidumping and countervailing duties, safeguard actions, etc.

Background

- Other explanations:
  - Slow adoption of new technologies by US firms (Oster 1982).
  - The rise of minimills in the US (Crandall (1996), Moore (1996), Tornell (1996).
  - Rents extorted by labor unions and firms have disinvested over time (Tornell (1996)).

Purposes of Paper

- General Purpose:
  - To consider the excess capacity effects and whether data support that such effects occur.
- Specific Purposes:
  - Distinguish between cyclical and structural excess capacity.
  - Empirical application:
    - Provides a test of cyclical dumping (few studies)
    - Provides a test of structural dumping (no studies)
    - Provides a set of data on foreign subsidies from CVD investigations.

Cyclical Dumping
Staiger and Wolak (1992)

- Foreign firm supplies its home market with protection, but may export to a competitive market.
- Foreign firm has production and capacity costs.
  - Production costs<export price<production + capacity costs.
- Capacity decisions made before home demand is realized
- In low demand periods, excess capacity is “dumped”.
- In high demand periods, there is no excess capacity.

Structural Excess Capacity

- We modify a simple version of Staiger and Wolak to allow for the effects of foreign subsidization, and demonstrate that subsidization lead to excess capacity.

- This increases the volume of exports by the foreign firm and can exacerbate cyclical excess capacity.

Summary of Results

- Data are exports of 37 steel products from 22 different foreign countries to the U.S. from 1979-2002.
- We find evidence of both cyclical and structural dumping, but…..
  - The effects are very isolated and seem isolated to less-developed countries especially Latin American
  - These countries account for only a small share of U.S. Steel consumption.

- HENCE, EXCESS CAPACITY HYPOTHESIS DOES NOT SEEM TO EXPLAIN THE ILLS OF THE U.S. STEEL MARKET.

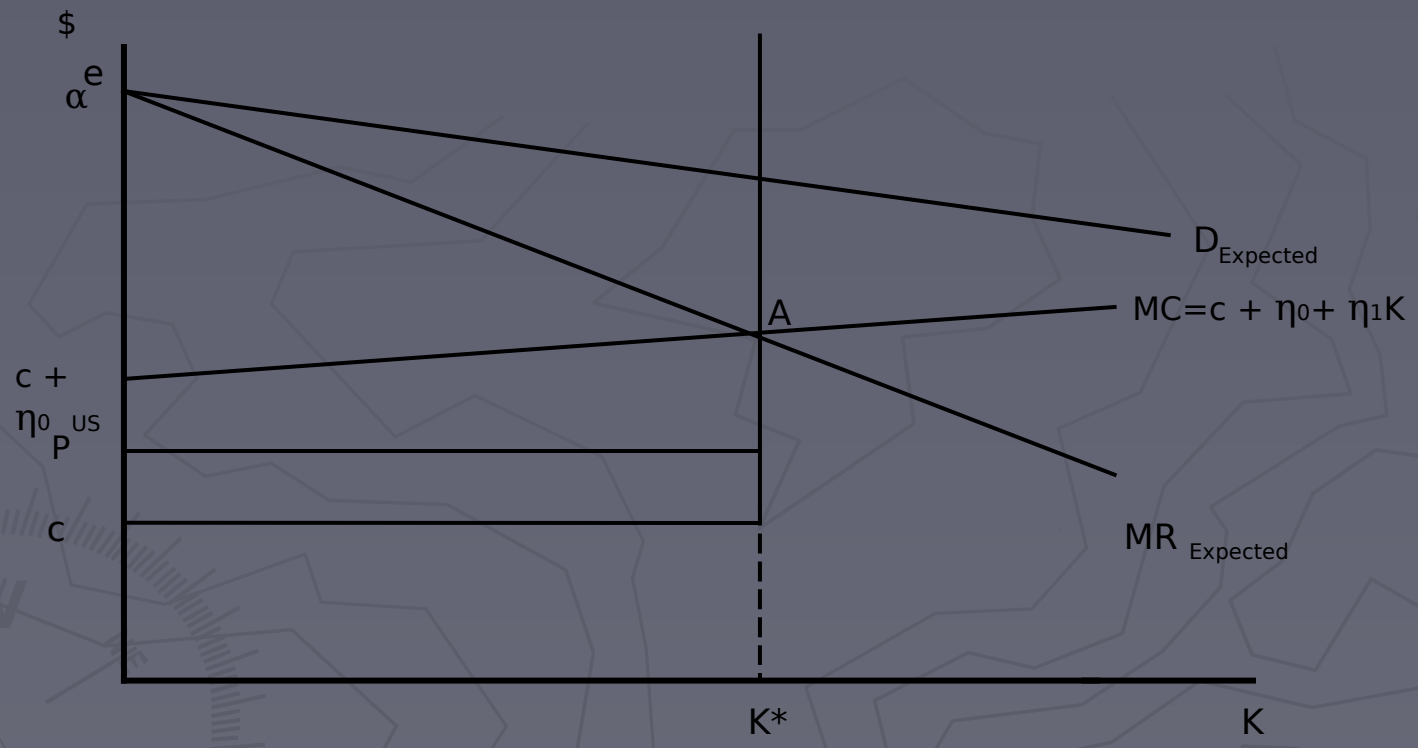
Conceptual (Capacity Choice)

$$\max_{K, Q^F, Q^{US}} Ep = (a^e - Q^F)Q^F - cQ^F + (P^{US} - c)Q^{US} - h_0 K - h_1 K^2$$

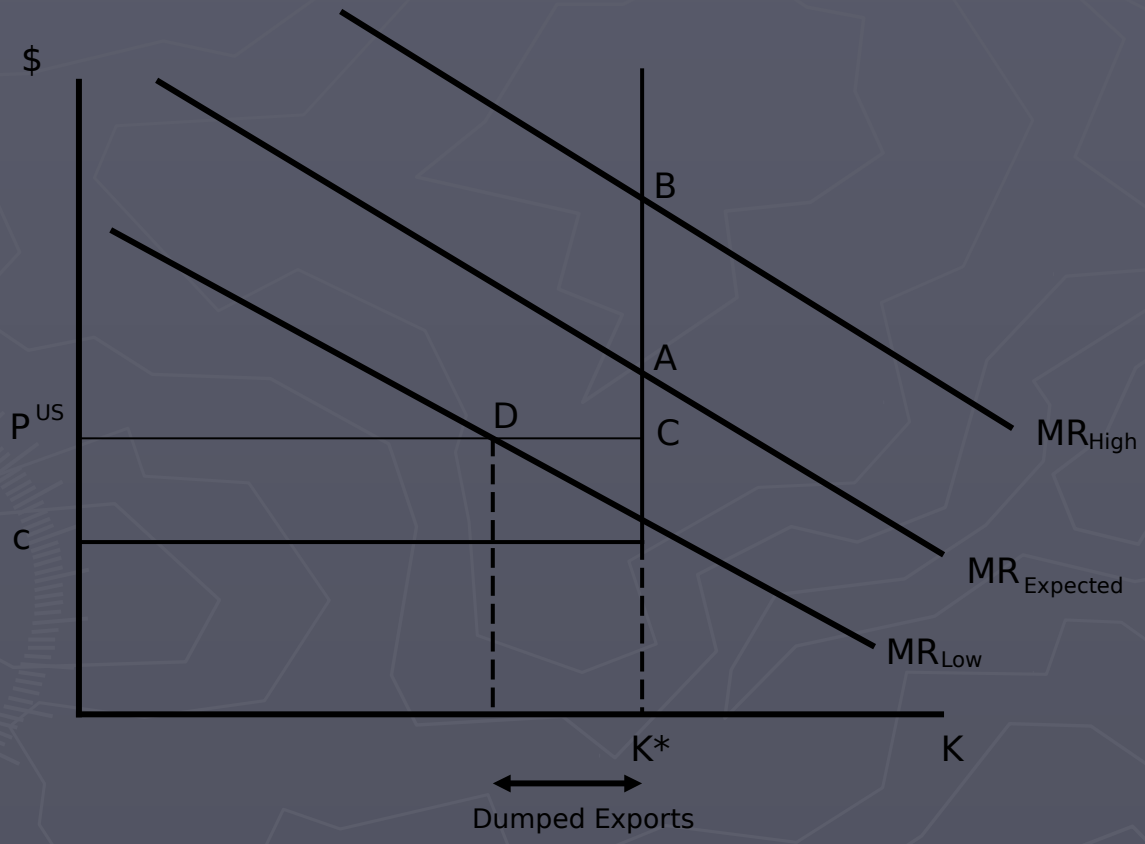
subject to $K \geq Q^F + Q^{US}$.

$$K^* = Q^{F^*} = (a^e - c - h_0) / (2(1 + h_1))$$

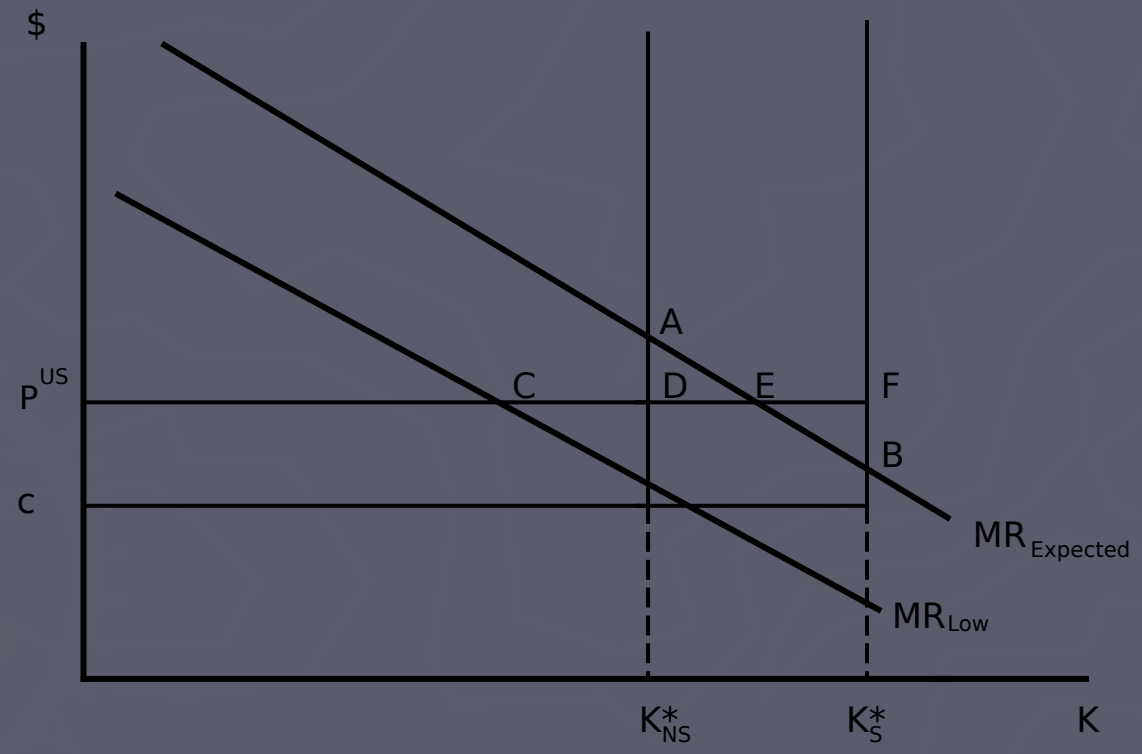
Capacity Choice



Output Choice
(after demand is realized)



Optimal Firm Output, Dumping, and Subsidies



CVD Protection

- Because of the effects that subsidization and dumping can impose on an industry, statues allow for countervailing duties.
  - US Steel has files 289 CVD cases from 1980-2002.
    - Most have been found to have insufficient evidence of foreign subsidies or found to be insignificant to be injurous.
    - Most active periods:
      - Early 1980s leading to VRAs
      - Early 1990s when VRAs expired in 1992
      - Late 1990s and early 2000s before steel safeguard protection.

Summary of CVD Cases

- Substantial variation in frequency of cases across countries and in “successful” outcomes.
  - Most activity against EC/EU, Korea, South Africa, and Latin American countries.
  - Success rates are generally lower with respect to EC/EU countries.
- Average CVDs for successful and non-suspended cases suggest that subsidization is more prevalent in Argentina, Brazil, Canada, Italy, South Africa and Spain.

Summary of CVD Cases

- Extent of US Steel affected by foreign subsidization.
  - Multiply % of a country exports * share of US consumption accounted for by the foreign country's exports of steel.
    - The largest impact is Germany at just .34% of the US market affected by subsidation.
    - Totals across all countries is just 1.32% is affected
- **CVD CASES ARE NOT SUGGESTIVE OF LARGE IMPACTS FROM FOREIGN SUBSIDIES.**

Empirical Specification

$$\ln EX_{ijt} = a + b_1 \ln USP_{ijt} + b_2 \ln FDem_{tt} + b_3 \ln Subsidy_{ijt} + b_4 \ln TProt_{ijt} + e_{ijt}$$

EXTons exported to US

USP(+) real foreign currency price for product in US market

FDEM(-) Measure of Demand in Foreign Market (real industrial value added)-cyclical excess capacity

Subsidy(+) 1+ad valorem foreign government subsidization rate-structural excess capacity

TPROT(-) matrix of variables measuring special US trade protection programs (CVDs, AD-Duties, VRAs, safeguards)

Year, Country Product Fixed effects, time series controls through first differencing.

Data

- 22 countries, 37 products, 1979-2002
- Primary sources:
  - Imports: American Iron and Steel Institute (*Annual Steel Report)*
  - Prices: Indices from Bureau of Labor Statistics
  - Exchange Rate: *International Financial Statistics*
  - Foreign Subsidization: Constructed from Federal Register.
  - Special Protection, from Federal Register

Initial Results

- Base model (column 1)
  - Cyclical and Structural Excess Capacity Effects Strong.
  - Control variables perform well.
- Does Foreign Subsidy exacerbate the cyclical capacity effect (column 2)?
  - Interact foreign demand with a dummy for positive subsidization.
  - Expect negative, more pronounced cyclical excess capacity. While negative, not statistically significant.
- Does cyclical dumping depend on whether foreign demand is in a high or low state? (column 3)
  - Interacted foreign demand with a dummy if above the trend or not. Effect is negative, not statistically significant.

	Base	Subsidy & Foreign Demand Interaction	High Versus Low Foreign Demand
Ln (U.S. Price)	0.647***	0.647***	0.646***
Ln (Foreign Demand)	-1.525***	-1.468***	-1.604***
Ln (1 + Subsidy Rate)	3.168**	3.161**	3.159**
Subsidy Dummy* Ln (Foreign Demand)		-0.397	
Ln (Foreign Demand) * Dummy for Demand Above Trend			0.174
Ln (1 +AD Duty)	-1.648***	-1.648***	-1.645***
Ln (1 + CV Duty)	-1.048	-1.043	-1.044
VRA Dummy Variable	-0.438***	-0.438***	-0.438***
Ln (1 + Safeguard Tariff Rate)	-1.480*	-1.488*	-1.474*
Constant	0.315**	0.313**	0.314**

Specification Issues

- No direct measures of capital costs
  - difference data by country-product combinations
  - Product, country, and year effects
- Measurement of foreign demand
  - Same results obtain with industrial production indices or real GDP
- Measurement of subsidy variable
  - Qualitative results the same as when we use a subsidy dummy variable.
- Are results consistent across subsamples?

High CVD vs Low CVD Products

	Cyclical Excess Capacity		Structural Excess Capacity	
	Coefficient on Foreign Demand	**F-Statistic**	**Coefficient on Subsidy**	**F-Statistic**
High-Activity CVD	**-1.48***		**3.15****	
	(pval=0.084)	**0.01**	(pval=0.046)	**0**
Low-Activity CVD	**-1.55*****	(pval=0.940)	**3.07***	(pval=0.972)
			(pval=0.093	

Non-OECD vs OECD

	Cyclical Excess Capacity		Structural Excess Capacity	
	Coefficient On Foreign Demand	**F-Statistic**	**Coefficient on Subsidy**	**F-Statistic**
Non-OECD	**-1.71*** **		**4.36** **	
	(pval=0.003)	**0.26**	(pval=0.011)	**5.63** **
OECD	**-1.27***	(pval=0.608)	**-0.65**	(pval=0.018)
	(pval=0.057)		(pval=0.601)	

South American vs Rest of Sample

	Cyclical Excess Capacity		Structural Excess Capacity	
	Coefficient On Foreign Demand	**F-Statistic**	**Coefficient on Subsidy**	**F-Statistic**
South American (Agentina, Brazil, and Venezuela)	**-2.38*** **		**4.65** **	
	(pval=0.003)	**9.97***	(pval=0.015)	**5.57** **
Rest of		(pval=0.0		(pval=0.0

Synopsis

- Are excess capacity effects larger for High CVD products? NO
- Are excess capacity effects different between OECD vs Non-OECD? Cyclical NO, Structural YES.
- Are excess capacity effects different for South American vs Rest of Sample? YES!
  - Coefficients on South American (Argentina, Brazil, and Venezuela) are large and statistically important, while for the other sample these are essentially zero.

RESULTS SUGGEST THAT EXCESS CAPACITY EFFECTS ARE LIMITED TO A FEW SOUTH AMERICAN COUNTRIES AND THESE COUNTRIES HAVE A COMBINED MARKET SHARE OF 3.6% IN 2002.

Summary and Conclusion

- US steel largest user of special U.S. trade protection laws.
- Justification is the need for protection from foreign producers that are subsidized, and this leads to dumping in the US.
- This paper separates short-run cyclical excess capacity from structural excess capacity.
- Initially find evidence of both cyclical and structural excess capacity.
- But, later find that the result is due to a very small set of countries with small market shares.
- UNLIKELY THAT EXCESS CAPACITY HAS BEEN A SIGNIFICANT FACTOR IN THE US STEEL INDUSTRY PERFORMANCE.